Chapter 1: Purpose and Need

Project History

In late 1990, the Northwest Arkansas Regional Airport Authority was formed to evaluate, plan, and develop a new commercial service airport to serve the air trade area of Northwest Arkansas. The Authority then prepared a feasibility study, site selection study, master plan, and environmental assessment for a proposed new airport. The Federal Aviation Administration (FAA) then prepared an Environmental Impact Statement (EIS) for the proposed site for the new airport. In August 1994 the FAA issued a Record of Decision on the EIS. Land acquisition and construction on the new airport commenced very shortly after issuance of the Record of Decision. The Northwest Arkansas Regional Airport (NWARA) started operation in November 1998 as a new primary commercial service airport serving air traffic passenger demand in northwest Arkansas, southwest Missouri, and northeast Oklahoma areas.

The Airport, located in the community of Highfill, Arkansas, accommodates both jet and turboprop passenger aircraft, along with general aviation and cargo operations. In addition the Airport provides passenger terminal facilities, air traffic control facilities, aircraft rescue and fire fighting facilities, aircraft maintenance and refurbishing facilities, and corporate aviation facilities. The primary entrance road connects the Airport to Highway 264 at the south end of the Airport. A secondary airport entrance road connecting to Highway 12 is located at the north end of the Airport.

The need for improved access to the new Airport was identified in the NWARA Site Selection Study in 1993. In 1994, the FAA's Northwest Arkansas Regional Airport EIS identified the need for "capacity improvements and safety enhancements" for the existing highway facility "or an alternative direct access route to the airport should be considered." In 1998, Congress enacted the Transportation Equity Act for the 21st Century (TEA-21), which identified an intermodal connector access road to the NWARA as a high priority project and authorized Federal-aid under the High Priority Project Program to partially fund the construction of the project. The Northwest Arkansas

Metropolitan Planning Organization (MPO) included the project in the 2025 Regional Transportation Plan and the Transportation Improvement Program (TIP) for Fiscal Years 2003-2005 adopted in 2002 and has been part of the TIP ever since.

Project Description

The proposed Northwest Arkansas Regional Airport Intermodal Access Road will provide high speed, intermodal connectivity between the Airport and the region's major highway system for airline passengers, air freight cargo movement, and employees of the facilities located at the Airport. A suitable study area was defined to delineate an area from which appropriate corridors and alignments could be selected to fulfill the requirements of the proposed project and its connectivity between the Airport and the current and future highway system. Figure A1 entitled *STUDY AREA MAP*, illustrates the limits of the study area to be used for the Intermodal Access Road. It is generally bounded by I-540 on the east, Highway 412 on the south, the NWARA on the north and west, and encompasses an area of 44.8 square miles (116 square kilometers).

The proposed project will ultimately be a four-lane divided highway designed to meet American Association of State Highway and Transportation Officials (AASHTO) criteria that have been adopted by the Federal Highway Administration (FHWA) and the Arkansas State Highway and Transportation Department (AHTD). The highway will be designed for a speed of 70 miles per hour (mph) [(110 kilometers per hour (km/h)] with full access control between interchanges. Figure A2 entitled *TYPICAL CROSS SECTION*, reflects a typical cross section of approximately 186 feet (56.6 meters) for the four paved lanes, median and shoulders of the proposed Intermodal Access Road. Initially two lanes of the ultimate four-lane facility will be constructed to provide an acceptable initial Level of Service (LOS) to the public. A full right-of-way width, consisting of an average of approximately 300 feet (100 meters), will be purchased for the proposed ultimate four-lane facility. Connections to the major highway systems in the area, which are I-540 or Highway 412, will be through full access controlled interchanges. The terminus at the Airport for the initial two-lane facility will be a signalized intersection; however, a grade separation at Highway 264 will be constructed for the ultimate four-lane facility. Highway 112 and several county roads will be crossed by grade separations to provide continuity of roads and local travel patterns. As appropriate and consistent with maintenance of essential road continuity, some county roads closure is contemplated. Table A1 entitled *DESIGN CRITERIA* provides a summary of the design criteria that will guide development of the Intermodal Access Road. There will be a transition section of the roadway as it approaches the southern entrance of the Airport. This transition section is required, as the traffic will transition from a 70 mph (110 km/h) speed on a

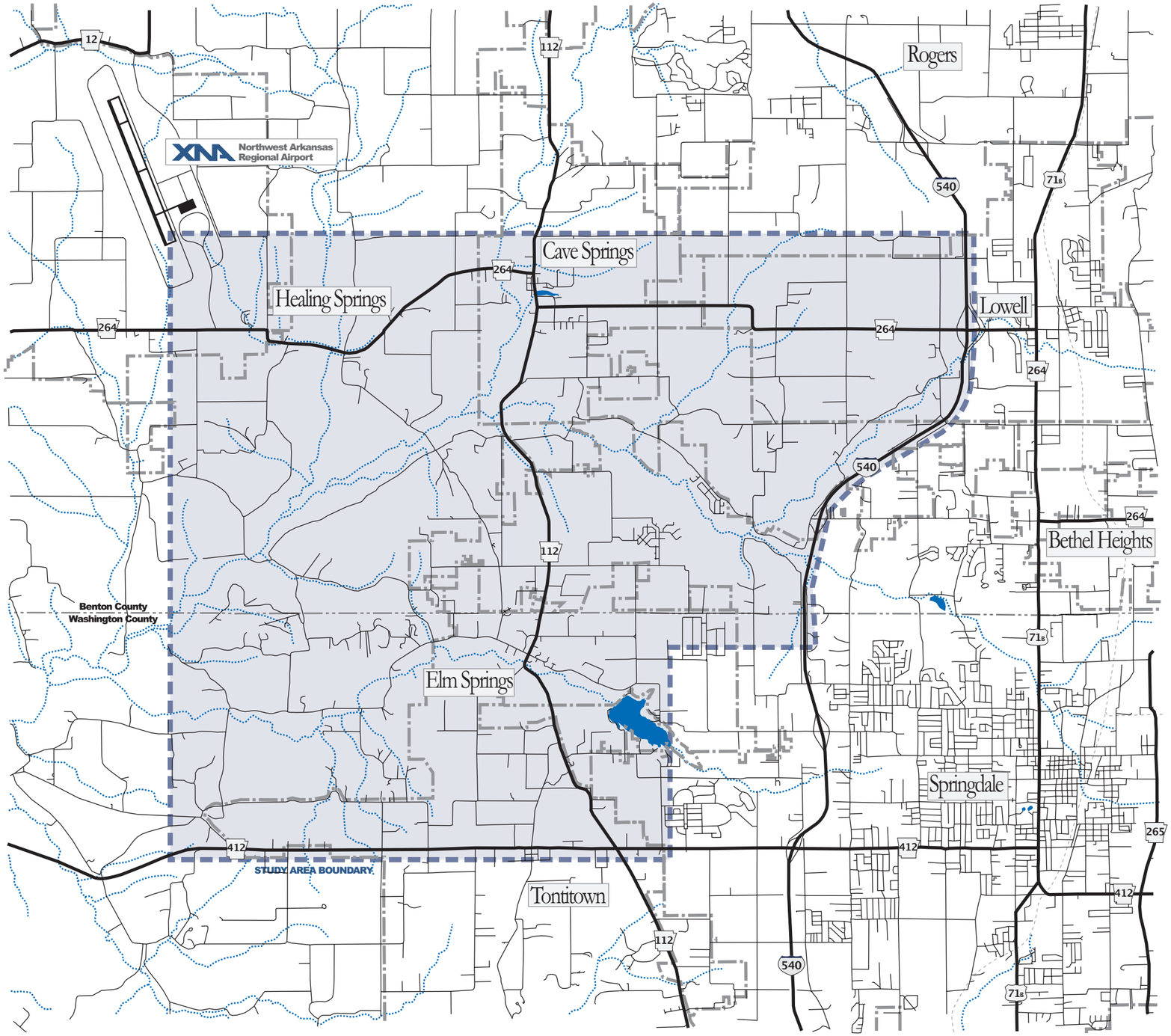


Figure A1 **Study Area Map**

- *Study Area Boundary*
- *Interstate Highway*
- *U.S. Highway*
- *State Highway*
- *City Limits*

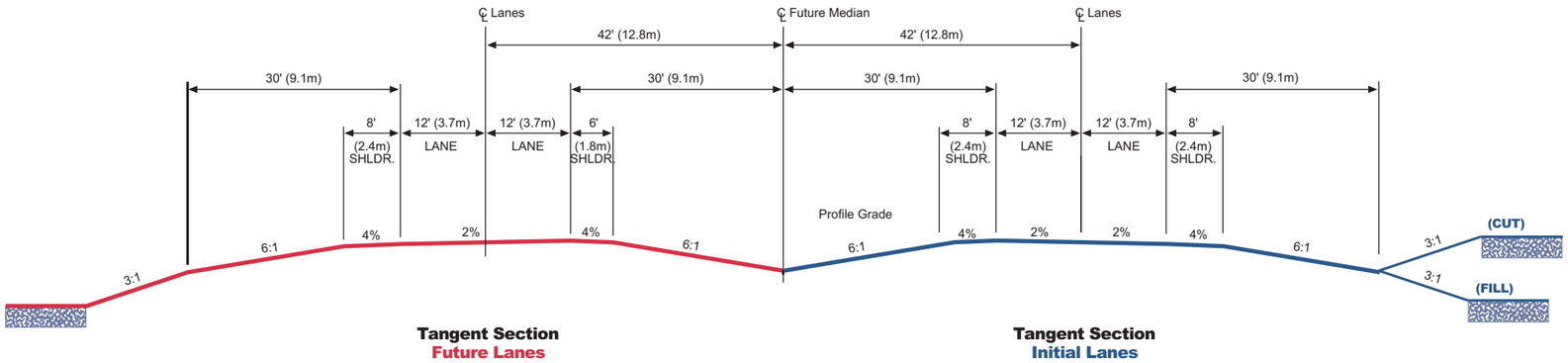
N

Approximate Scale
1" = 6,000'

Northwest Arkansas
Regional Airport
Intermodal Access Road
Environmental Impact
Statement

Source: CH2M Hill
State Project Number 090069 — FAP HPP-0238(1)

Figure A2 **Typical Cross Section**



Not to Scale

Northwest Arkansas
Regional Airport
Intermodal Access Road
Environmental Impact
Statement

Source: CH2M Hill
State Project Number 090069 — FAP HPP-0238(1)

four-lane divided pavement section with paved shoulders to a 40 mph (60 km/h) four-lane divided pavement section with curb and gutter.

Table A1
DESIGN CRITERIA
Northwest Arkansas Regional Airport Access Road DEIS

Item	Value
Design Speed	70 mph (110 km/h)
Median Width	variable with 60 feet (18 m) minimum
Number of Lanes	2-initially/4-ultimately
Maximum Profile Grade	4%
Maximum Degree of Curve	3-degree

Note: Design Criteria typical except for transition section approaching southern entrance of airport.

Project Purpose

The purpose of the proposed project is to provide an intermodal connection for the safe and efficient movement of air transportation passengers and property between the NWARA and the region's major highway system.

The current highway system providing access to the primary airport entrance does not safely and efficiently accommodate existing traffic demand. It has a traffic mix consisting of automobiles, trucks, farm equipment, school buses, and mail carriers, and contains roadway geometric conditions that will contribute to projected congestion and low levels of service in the future. Based on the crash history, it can be concluded that the route has a higher crash rate than similar roadways. Existing intersection and segment LOS analysis shows that the two-lane facilities are currently operating at LOS C/C, and LOS C/F at the two unsignalized intersections in Cave Springs. These roadway conditions indicate a need for improved access to the Airport. Without additional roadway capacity, congestion, travel times and crash rates will likely continue to increase, and access to the Airport will be severely limited. Future traffic volume projections indicate that by 2012 the performance of the existing "off airport" roadways will degrade to LOS D on the segment of Highway 264 East of Cave Springs. The unsignalized intersections will continue to degrade and by the year 2017 both intersections analyzed will operate at LOS F. Therefore, the purpose of the project is to provide improved

access to the NWARA that will safely and efficiently accommodate both existing and future traffic demand generated by airport activities.

Transportation Need

With the project purpose identified, the transportation needs of airport users were analyzed. This analysis identifies needs and deficiencies of the existing highway network providing access to the Airport that could be accommodated or resolved by the proposed Intermodal Access Road. In addition, the existing transit availability will be analyzed.

Existing Roadway System

The existing highway system in the study area is composed of several different roadways, as illustrated on Figure A3. This figure reflects the study area and the highway system surrounding the NWARA, including those highways that are beyond the study area but do serve as a portion of the overall highway system in the area of the Airport. Traffic counts are shown on Figure A7, and were derived by using the AHTD Springdale Northern Bypass Final Environmental Impact Statement (SNB FEIS) traffic counts for 2004 and forecasts for 2024, as well as AHTD traffic counts through 2007 and then utilizing a straight line forecast to 2008 and 2028.

Interstate 540. I-540 is a north/south, divided four-lane full access controlled highway. This highway has a posted speed of 70 miles per hour (110 km/h) and a travel way width of 24 feet (7.3 meters) for the two-lanes of traffic in each direction. Traffic counts indicate a 2007 average daily traffic (ADT) of 63,900 on I-540 south of the Highway 264 interchange, with trucks representing approximately 10% of the total.

Highway 412. Within the study area, Highway 412 is an east/west, undivided five-lane highway facility. This highway has a posted speed through the Tontitown area of 45 miles per hour (80 km/h) and a travel way width of 24 feet (7.3 meters) for the two lanes of traffic in each direction. The center lane, or 5th lane, serves as a left turn lane. Traffic counts for Highway 412 east of Tontitown reflected 30,400 ADT in 2007 with trucks accounting for about 18% of total ADT.

Highway 264. Highway 264 generally is an east/west state highway connecting with I-540 in the east and intersecting with Highway 12 to the west of the NWARA. Highway 264 is a two-lane highway that provides the most direct connection from the airport to the area's existing highway network. Highway 264 also serves as the primary access to the airport's southern entrance, which is located approximately one mile (1.6 km) west of

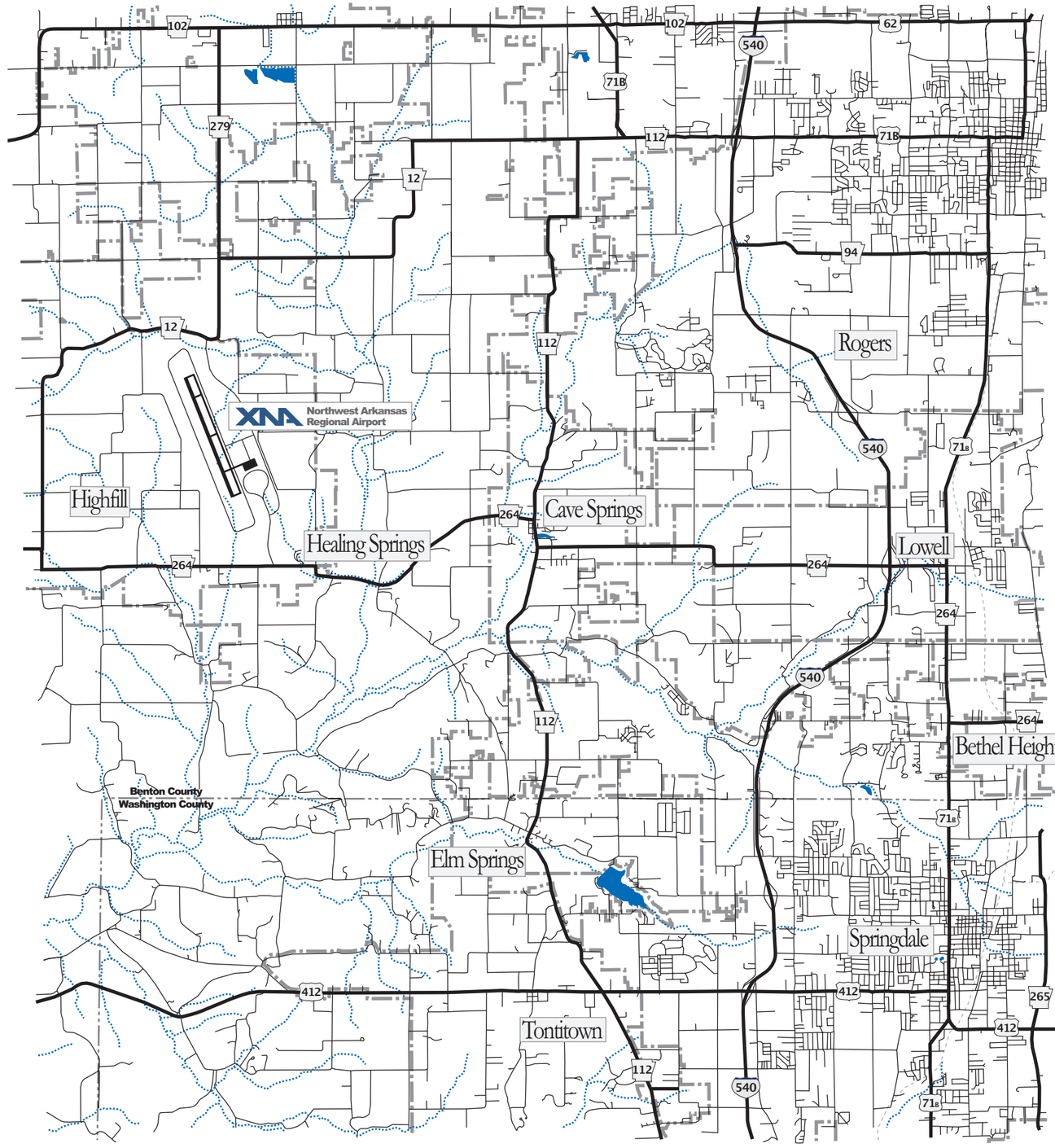


Figure A3 **Existing Highway Network**

Interstate Highway
U.S. Highway
State Highway

Approximate Scale
1" = 8,500'

Northwest Arkansas
Regional Airport
Intermodal Access Road
Environmental Impact
Statement

Source: CH2M Hill
State Project Number 090069 — FAP HPP-0238(1)

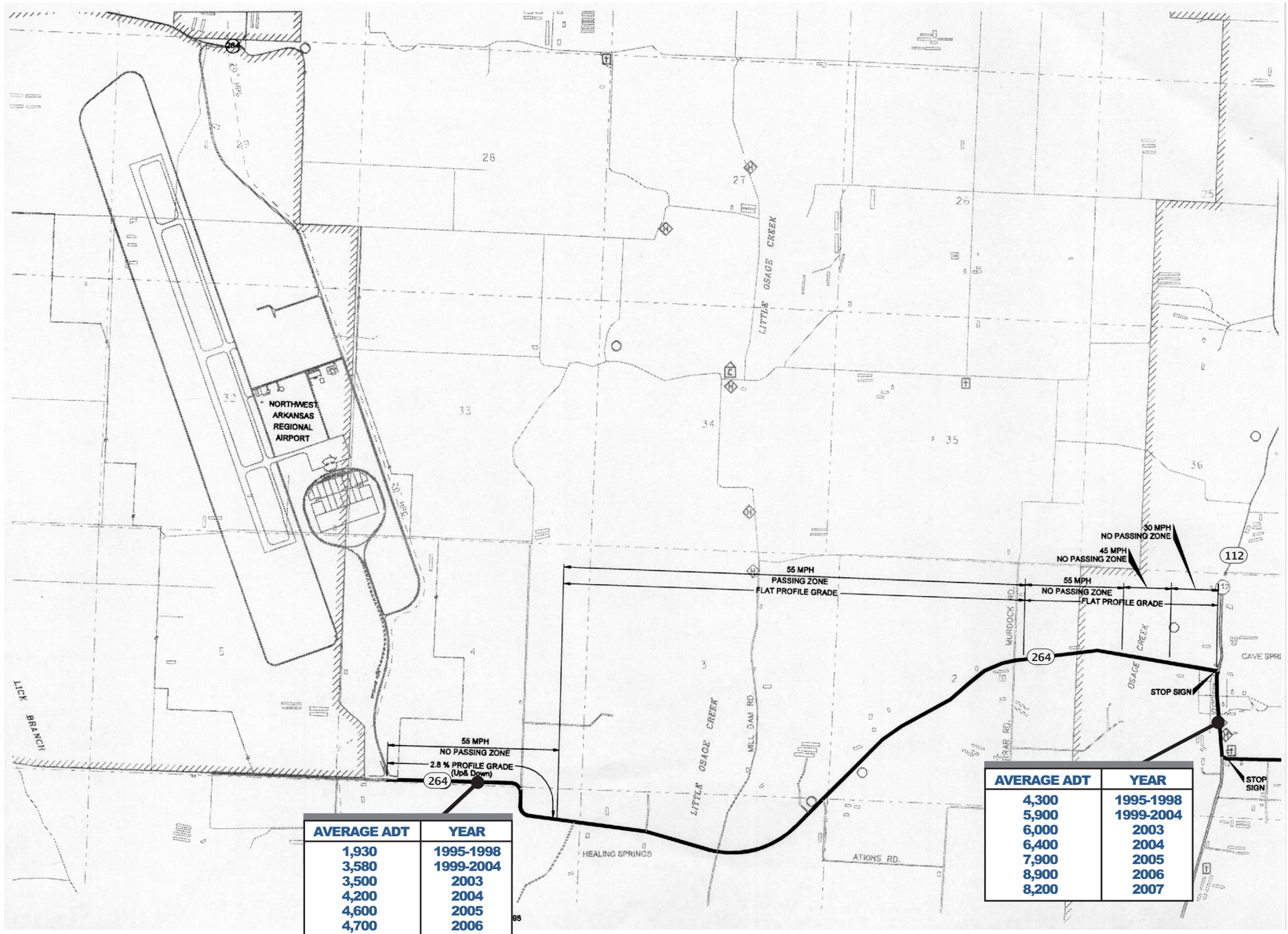
Healing Springs and three miles (4.8 km) east of the intersection of Highway 264 and Highway 12. Traffic counts conducted in 2000 and 2004 as part of the NWARA Intermodal Access Road Trip Generation Study (see Appendix A1) indicated an ADT count of approximately 5,100 in 2005 on Highway 264, near Healing Springs, with trucks accounting for 6% of total ADT. The 2007 ADT was 4,600 at this location. This compares to an ADT of 2,100 in 1998, the year the Airport opened. Additional discussion of the level of service (LOS) and capacity of Highway 264 is included later in this chapter in the section on Highway Capacity and Congestion.

The current alignment of Highway 264 east of the airport entrance to I-540 includes four 90-degree curves and passes through the towns of Cave Springs, Healing Springs, and Highfill. In Cave Springs there are two intersections that operate by controlling Highway 264 traffic only, allowing Highway 112 traffic to flow freely. Due to the horizontal and vertical alignment, much of this portion of the highway is composed of no passing zones. The two-lane pavement is generally 22-24 feet (6.7-7.3 meters) in width with minimal shoulders. Two areas, one near the airport entrance and one near Healing Springs, have on occasion been subject to inundation during periods of heavy rainfall run-off events. There are currently no improvements on Highway 264 included in the Statewide Transportation Improvement Plan (STIP) for Fiscal Years 2007-2010 that would greatly improve the current highway. The planned improvement of the unsignalized intersection of Highway 264 East and Highway 112 in Cave Springs is scheduled for late 2008.

For purposes of this analysis, Highway 264 was divided into two sections, I-540 to Cave Springs and Cave Springs to NWARA [referred to as Highway 264 East of Cave Springs (East) and Highway 264 West of Cave Springs (West), respectively. This is presented graphically on Figures A4 and A5 on the following pages and reflects average ADT counts prior to opening of the Airport and average ADT from Airport opening to 2007.

Highway 112. Highway 112 is a north/south two-lane rural highway that generally bisects the study area from a northern intersection with Highway 12 in Bentonville through an intersection with Highway 264 approximately five miles (8 km) east of the airport in Cave Springs, passes through Elm Springs, and intersects with Highway 412 at Tontitown on the south. Traffic counts on Highway 112 south of Cave Springs reflect an ADT of 6,400 in 2007 with 10% trucks.

The current alignment of this highway includes several sharp curves and passes through Cave Springs and Elm Springs. Due to the horizontal and vertical alignment, much of this portion of the highway is composed of no passing zones. The two-lane pavement is generally 22-24 feet (6.7-7.3 meters) in width with narrow shoulders.



AVERAGE ADT	YEAR
1,930	1995-1998
3,580	1999-2004
3,500	2003
4,200	2004
4,600	2005
4,700	2006
4,600	2007

AVERAGE ADT	YEAR
4,300	1995-1998
5,900	1999-2004
6,000	2003
6,400	2004
7,900	2005
8,900	2006
8,200	2007

Figure A4 **ADT - Highway 264 - West of Cave Springs**

Illustration Legend

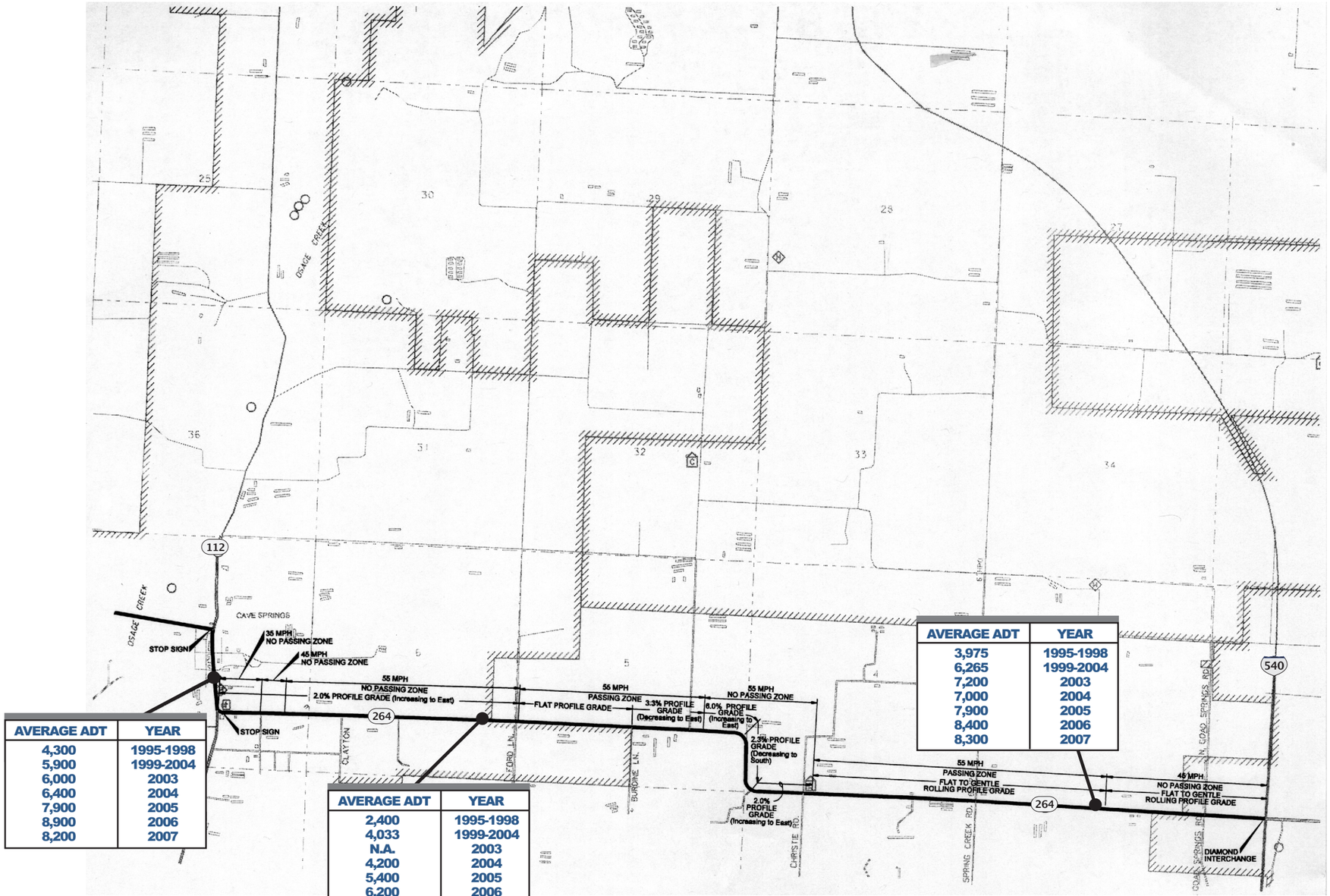
AVERAGE ADT	1995-1998 Four-Year Average Prior to Airport Opening
AVERAGE ADT	1999-2002 Four-Year Average Following Airport Opening
ANNUAL ADT	Year

Source: AHTD
Annual ADT Counts

Not to Scale

Northwest Arkansas Regional Airport Intermodal Access Road Environmental Impact Statement

Source: Base Map, CH2M Hill Traffic Data, AHTD
State Project Number 090069 — FAP HPP-0238(1)



AVERAGE ADT	YEAR
4,300	1995-1998
5,900	1999-2004
6,000	2003
6,400	2004
7,900	2005
8,900	2006
8,200	2007

AVERAGE ADT	YEAR
2,400	1995-1998
4,033	1999-2004
N.A.	2003
4,200	2004
5,400	2005
6,200	2006
5,300	2007

AVERAGE ADT	YEAR
3,975	1995-1998
6,265	1999-2004
7,200	2003
7,000	2004
7,900	2005
8,400	2006
8,300	2007

Figure A5 **ADT - Highway 264 - East of Cave Springs**

Illustration Legend

AVERAGE ADT	1995-1998 Four-Year Average Prior to Airport Opening
AVERAGE ADT	1999-2002 Four-Year Average Following Airport Opening
ANNUAL ADT	Year

Source: AHTD
Annual ADT Counts

N
Not to Scale

Northwest Arkansas
Regional Airport
Intermodal Access Road
Environmental Impact Statement

Source: Base Map, CH2M Hill Traffic Data, AHTD
State Project Number 090069 — FAP HPP-0238(1)

Highway 12. Highway 12 is north of the study area but serves as the northern boundary of the Airport and connects to the northern airport entrance road. Traffic counts on this highway south and west of Bentonville reflects 6,150 ADT in 2007.

The current alignment of this highway includes numerous 90-degree curves and passes through Highfill west of the Airport, and Vaughn and Bentonville to the northeast of the Airport. Due to the horizontal and vertical alignment, much of this portion of the highway is composed of no passing zones. The two-lane pavement is generally 22-24 feet (6.7-7.3 meters) in width with 6-8 feet (1.8-2.4 meters) shoulders.

In addition there are other county roads that provide access between state and Federal highways in the study area. For the most part these county roads are two-lane gravel roads with few having asphalt surfaces. Existing roadway data for the highways in the Study Area are summarized in Table A2 entitled *EXISTING ROADWAY DATA*.

Table A2
EXISTING ROADWAY DATA
Northwest Arkansas Regional Airport Access Road DEIS

Highway/ From:	To:	Length	No. of Lanes	Posted Speed	No. of 90-deg Curves	Pavement Width	Shoulder Width
Highway 264							
I-540	Highfill	12.1 mile (19.5 km)	2	35, 55 mph (55, 90 km/h)	6	22-24 feet (6.7-7.3 m)	2-6 feet (0.6-1.8 m)
Highway 112							
Highway 412	Cave Springs	6.5 mile (10.45 km)	2	35, 55 mph (55, 90 km/h)	4	22-24 feet (6.7-7.3 m)	2-6 feet (0.6-1.8 m)
Highway 12							
Bentonville	Highfill	12.2 mile (19.63 km)	2	35, 55 mph (55, 90 km/h)	6	22-24 feet (6.7-7.3 m)	6-8 feet (1.8-2.4 m)

Proposed Roadway System

Springdale Northern Bypass. AHTD has prepared an EIS for a proposed Highway 412 bypass around the northern portion of Springdale, Arkansas, locally known as the

Springdale Northern Bypass (SNB). A Record of Decision (ROD) was received for the SNB in February 2006. The bypass is proposed to be a four-lane, fully controlled access freeway, with two 12-foot (3.6 meter) travel lanes in each direction separated by a variable width median. Right-of-way requirements will vary depending on the depths of cut and heights of fill, but are estimated to average about 300 feet (90 meters) for the new location facility.

This proposed highway facility will start just west of Tontitown, intersect with I-540 north of Springdale, continue eastward to cross Highway 71B, then dip southward to intersect with Highway 412 east of Springdale. The primary purpose of the SNB is to improve the level of service (LOS) on the Highway 412 High Priority Corridor. However, it will also provide improved traffic exchange and connectivity between I-540, the Highway 412 High Priority Corridor, the Intermodal Access Road, and other routes in the region's major highway system. The Selected Alignment is shown on Figure A6, entitled *AHTD SPRINGDALE NORTHERN BYPASS SELECTED ALIGNMENT,* and discussed in more detail in the Alternatives Section of this DEIS.

From the beginning of the SNB and the Intermodal Access Road projects, commitments were made to closely coordinate the projects and investigate the possibility of shared roadway sections for the two projects. This would reduce costs and minimize impacts to the region caused by road construction and operation for both facilities. As the corridor and alignment studies progressed for the two projects, information used for the Intermodal Access Road DEIS was also used in the development of the SNB corridors and vice versa.

Transportation Demand

The demand for transportation services is reflected in current traffic volumes observed on area roadways and future traffic projections. The overall regional traffic is continuing to grow at a rapid pace. Traffic forecasts reflect a projected growth along I-540 south of the Highway 264 interchange from an ADT of 66,700 in 2008 to an ADT of 118,300 in 2028, a twenty-year growth rate of 77%, or 3.8% annual average growth rate. Likewise similar forecasts for Highway 412 east of Tontitown reflect a growth from an ADT of 31,000 in 2008 to 48,300 in 2028, for a56% growth rate, or 2.8% annual average growth rate. The percentage of trucks on these highways ranges from 10% on I-540 to 18% on Highway 412. Wal-Mart, Tyson Foods and J.B. Hunt Transport, and other major commercial and industrial companies located in the regional area contribute considerably to the overall traffic growth and percentage of trucks. Average daily traffic values for 2008 and 2028 are illustrated in Figure A7, and were derived using the AHTD SNB FEIS traffic counts for 2004 and forecasts for 2024 and AHTD ATD counts for 2003 through 2007 with a straight-line forecast to 2008 and 2028.

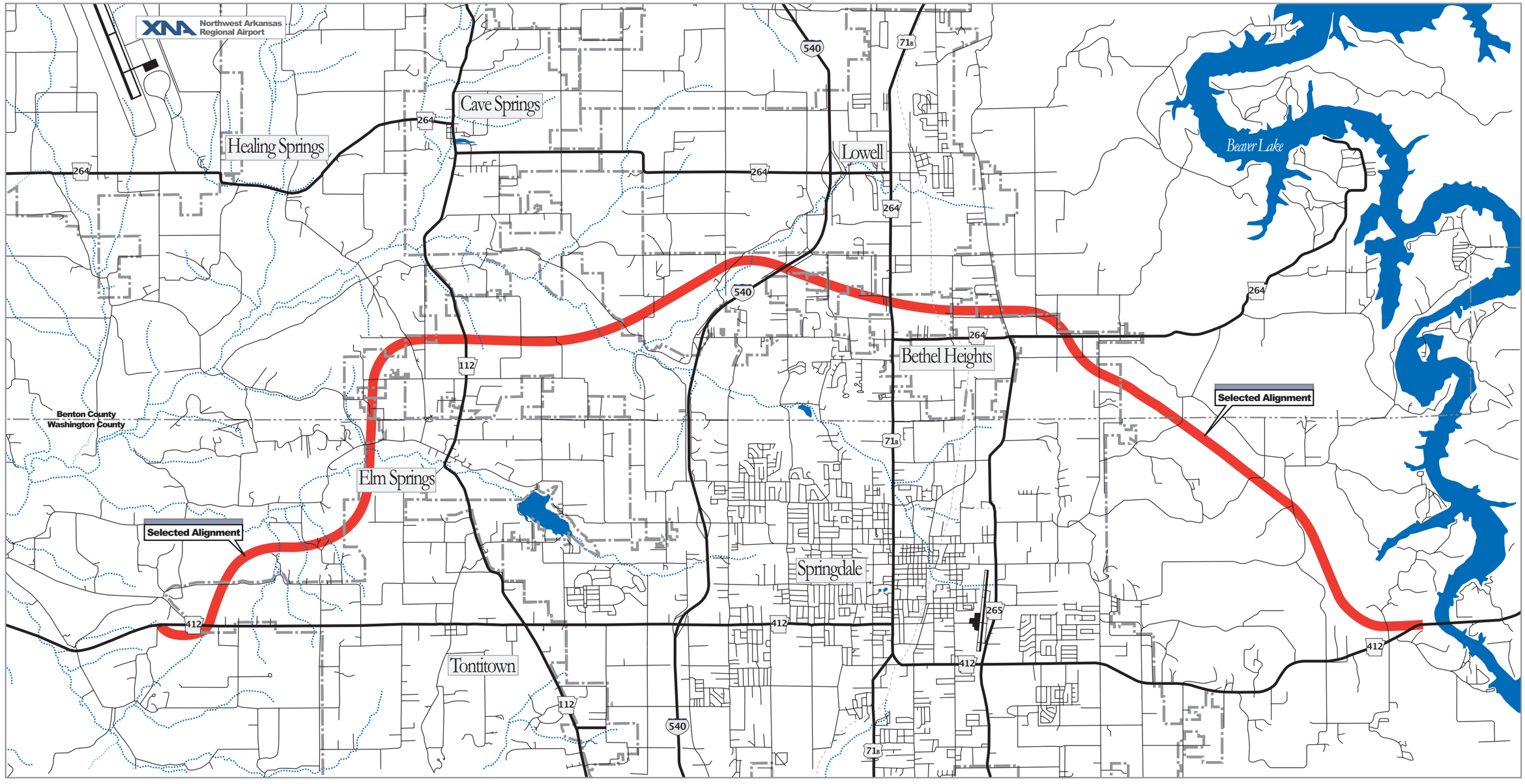


Figure A6 **AHTD Springdale Northern Bypass Selected Alignment**

- *Selected Alignment*
- *Interstate Highway*
- *U.S. Highway*
- *State Highway*

Approximate Scale
1" = 6,000'

Northwest Arkansas
Regional Airport
Intermodal Access Road
Environmental Impact
Statement

*Source: **Arkansas Highway Transportation Department (AHTD)***
State Project Number 090069 — FAP HPP-0238(1)

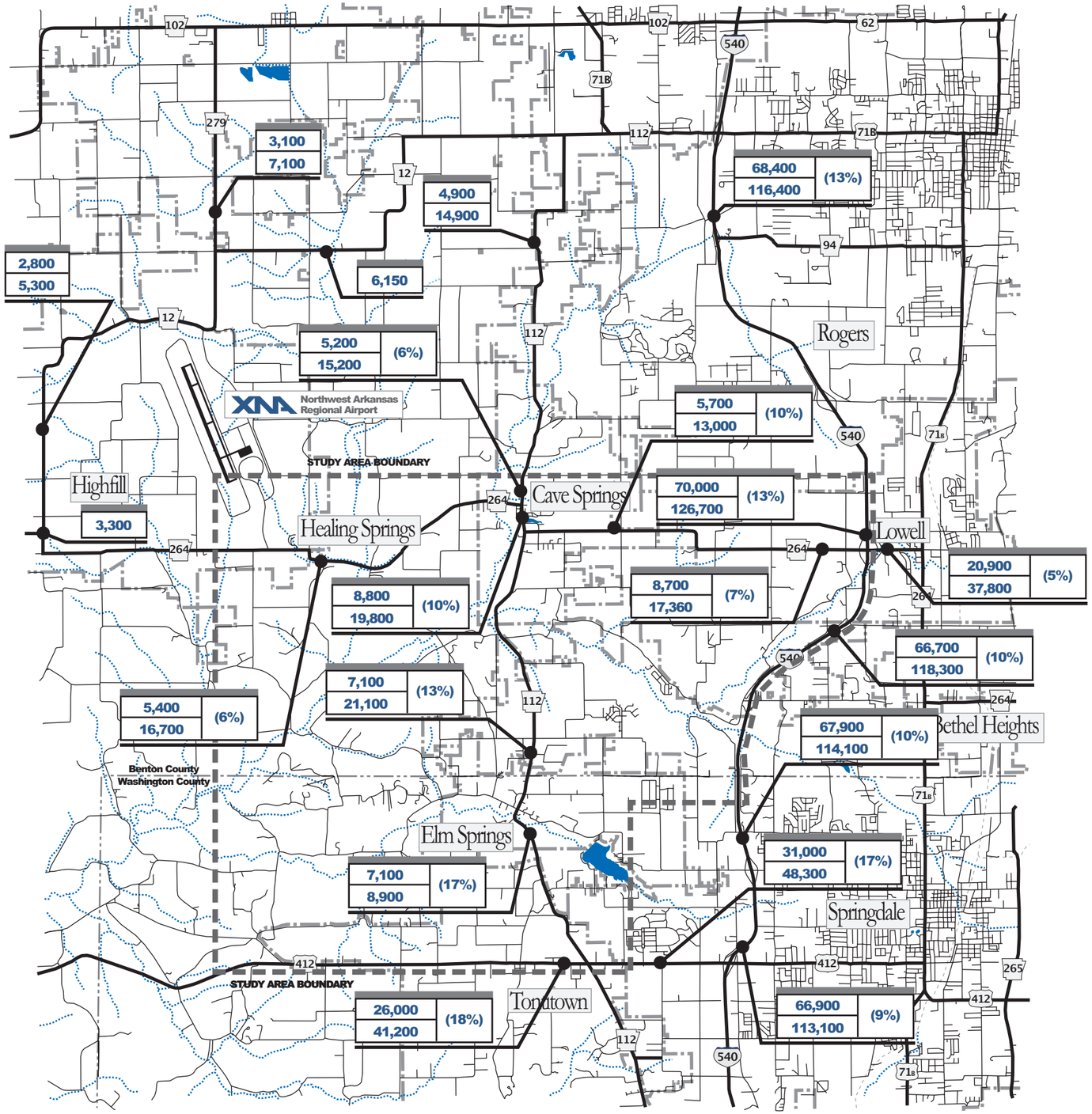


Figure A7 **2008/2028 ADT Map**

Illustration Legend

2,400 — 2008 Traffic Count (2000 ADT + 3% Year to 2008)

2008 ADT / 2028 ADT (%Trucks)

Note: Forecasts developed from traffic data provided by AHTD.

- *Study Area Boundary*
- *Interstate Highway*
- *U.S. Highway*
- *State Highway*

Approximate Scale
1" = 8,500'

Northwest Arkansas Regional Airport Intermodal Access Road Environmental Impact Statement

Source: AHTD and/or CH2M Hill Forecast
State Project Number 090069 — FAP HPP-0238(1)

The AHTD stated in the SNB FEIS that the average annual growth rate for highways north of Highway 412 is 4.75% as compared to 3.83% south of Highway 412. As a comparison, the statewide annual average growth rate is 2%. In other words, transportation demand in this area is growing at more than twice the rate of statewide averages.

Enplanement Growth. Although there is no direct relationship between population and passengers that board an aircraft (i.e., enplanements), it can be stated that as population increases, so do enplanements. This is especially true when there is a robust economy and local large business centers (for example, Wal-Mart, J.B. Hunt Transportation, Tyson Foods, the University of Arkansas, etc.) that attract substantial business activity.

Passenger demand for air travel at Drake Field in Fayetteville, expressed in enplanements, was growing at a rate between 16 and 20% per year prior to the opening of the new Airport in November 1998. During its first full year of operations in 1999, the NWARA recorded 320,500 enplanements, a passenger growth rate that is 55% greater than the number of enplanements projected in the Airport's 1997 feasibility study (Ricondo & Associates, 1997). In 2000, enplanements grew to 357,162, still ahead of projections. Passenger demand, and subsequently aircraft operation demand, has been so great that the Authority has already expanded automobile parking lots and terminal aircraft parking aprons. An expansion of the terminal building is ongoing and further expansion is in the planning stages. Recently, an Airport Master Plan Update was completed to determine the most efficient and feasible way to accommodate the growing passenger demand.

The most recent planning document for the Airport, the 2004 Airport Master Plan Update, forecasted enplanements to be 468,590 in 2005 and 567,360 in 2010. In 2004, enplanements approached the original 2008 forecasted numbers. That same report forecasted enplanements at NWARA to increase at an average compounded rate of 3.7% to 2020. The FAA predicts between 2 and 3.4% increase nationally for the same time period. As can be seen, enplanements at NWARA have historically exceeded the national average. The rate of enplanement growth has leveled off at the Airport over recent months, as airlines serving NWARA have reduced the number of flights and sizes of airplanes operating at the Airport. However, the Airport is moving forward with plans to expand the terminal and, subsequently, to attract additional air carriers. With the availability of additional capacity, the Airport expects to return to enplanement growth levels more consistent with overall growth levels of the region. In fact, subsequent to the preparation of the Master Plan Update, the enplanement forecasts were updated due to the unprecedented growth levels of the recent past. The most recent enplanement forecast is shown in Table A3.

As enplanements and services increase, surface traffic demand increases. The Airport is an origin and destination center for ground transportation, and the proposed Intermodal Access Road will act as an intermodal connector between the air traffic and the major highway system for not only passengers and cargo shipments, but also airport related service vehicles and employees. A recent AHTD air cargo study for the NWARA indicated that improved roadway access would have the potential to increase air cargo/air freight shipped to and from the Airport since a significant portion of air cargo is transported by expedited truck service[1].

Traffic counts were taken on the state highways bordering the NWARA during February 2000 and March 2004 and compared to the enplanements for that same time period. From these traffic counts and enplanements, and projections of future enplanements, expected traffic volumes generated by the Airport on Highway 12 and on Highway 264 were developed as shown in Table A3 entitled *ENPLANEMENTS AND AVERAGE DAILY TRAFFIC FORECASTS, COMBINED NORTH/SOUTH TRAFFIC FLOW (2008-2028).*

Table A3
ENPLANEMENTS AND AVERAGE DAILY TRAFFIC FORECASTS, COMBINED NORTH/SOUTH TRAFFIC FLOW (2008-2028)
Northwest Arkansas Regional Airport Access Road DEIS

FORECASTS	2008	2013	2018	2023	2028
Enplanements	571,838[1]	757,900	878,620	1,018,560	1,180,790
Average Daily Traffic for Airport	9,720	15,915	21,865	25,465	29,520

Source: ADT forecasts from CH2M Hill Trip Generation Study (Appendix A1).
BARNARD DUNKELBERG & COMPANY enplanement forecast, NWARA Master Plan Update.
[1] The actual enplanements recorded for 2008 were 571,845, reflecting the accuracy of the enplanement forecast in the Airport Mater Plan Update.

Actual vehicle traffic counts taken on airport access roads for finite periods of time, such as 24-48 hours, will reflect significantly different values than annual average daily traffic values developed through detailed analysis. Daily passenger enplanement values vary from day to day, week to week, and season to season, which directly impacts daily vehicle traffic. This difference is magnified at smaller, regional commercial service airports, like NWARA, than large hub airports that have greater connectivity to the

[1] *Northwest Arkansas Regional Airport Air Cargo Study and Freight Transportation Access Assessment*, Arkansas State Highway and Transportation Department, May 2006.

national "hub and spoke" aviation system, and therefore, experience fewer variations in passenger enplanements. Furthermore, when an airport is relatively new and small, again like NWARA, the majority of passengers arrive and depart by private vehicles as is reflected in this forecast, as there are few shared ride options available than at larger, more established airports.

In addition to passenger demand, there is both existing and future demand for on-airport support facilities and ancillary compatible commercial/retail establishments. The Airport and immediately surrounding areas are experiencing rapid development and growth sooner than anticipated. Growing aircraft enplanements and airport related employment are placing increasing demands on the existing surface transportation system.

Population. As shown in Table A4 entitled *POPULATION AND EMPLOYMENT TRENDS AND PROJECTIONS*, the Fayetteville-Springdale-Rogers Metropolitan Statistical Area (MSA), which includes parts of Benton and Washington Counties, experienced remarkable population growth from 1990 through 2000. During that ten-year period, population in the two-county region increased 47.5%. In addition, similar growth is expected to continue as projections call for the region's population to grow to 678,476 by 2025, a growth of 104% over 25 years.

Employment. As remarkable as the population growth has been during the decade of the 1990s, employment in the Fayetteville-Springdale-Rogers MSA has grown even faster. During the ten-year period, employment grew by 55%, a rate of growth that is 179% greater than the nation and 109% greater than the state. At the beginning of 2000, unemployment rates within the region were 2.5%, compared to unemployment rates of 4.4% for the state and 4.0% for the nation (*Arkansas Business & Economic Review*, Volume 32, University of Arkansas). Table A4 illustrates projections that the region will continue its high rate of growth. This shows that 57% more jobs will be added to the region's economy between the year 2000 and 2025.

Summary. Population and employment growth is expected to continue, along with direct and induced development, throughout the foreseeable future. This growth has resulted and will continue to result in increased traffic on the region's highway system. This is especially true in relation to one of the region's major traffic generators, the NWARA. As population increases, coupled with a robust economy, the demand for air travel for both leisure and business purposes will also increase. This will result in more traffic demand and congestion placed upon the area's existing roadways in general and Highway 264 in particular.

Table A4
POPULATION AND EMPLOYMENT TRENDS AND PROJECTIONS
Northwest Arkansas Regional Airport Access Road DEIS

Jurisdiction	1990	Average Annual Percent Change (1990-2000)	2000	Projected Average Annual Percent Change (2000-2005)	2005	Projected Average Annual Percent Change (2005-2010)	2010	Projected Average Annual Percent Change (2010-2025)	2025	Projected Average Annual Percent Change (2000-2025)
POPULATION										
Fayetteville-Springdale-Rogers MSA[1]	212,849	5.60%	332,011	1.94%	364,249	3.31%	424,488	3.99%	678,476	4.17%
Benton County[1]	98,524	5.72%	154,836	4.10%	186,540	4.23%	225,957	5.18%	401,635	6.38%
Washington County[1]	114,325	3.88%	158,720	2.39%	177,709	2.34%	198,531	2.63%	276,841	2.98%
State of Arkansas[1]	2,350,624	1.37%	2,673,400	0.91%	2,794,974	1.00%	2,935,108	1.24%	3,479,048	1.21%
United States[2]	249,439,000	1.04%	275,306,000	0.90%	287,716,000	0.84%	299,862,000	0.84%	337,815,000	0.91%
EMPLOYMENT										
Fayetteville-Springdale-Rogers MSA[3]	128,250	4.8%	198,790	2.4%	224,090	2.1%	248,670	1.5%	312,970	2.0%
Benton County[3]	57,180	5.5%	93,640	2.9%	107,910	2.5%	122,150	1.9%	161,440	2.4%
Washington County[3]	71,070	4.3%	105,150	2.0%	116,180	1.7%	126,520	1.2%	151,530	1.7%
State of Arkansas[3]	1,209,850	2.4%	1,528,080	1.5%	1,644,450	1.3%	1,756,430	1.1%	2,083,030	1.4%
United States[3]	139,184,590	1.7%	166,657,020	1.3%	177,620,320	1.2%	188,290,790	1.1%	222,228,790	1.3%

Source: 1. Population projections obtained from the Center for Business and Economic Research, University of Arkansas, 2004.
2. Population projections obtained from U.S. Census Bureau, 2005.
3. Employment projections for the years 2000 through 2025 are from the Wilbur Smith Associates Draft Report of Preliminary Traffic and Revenue Study, April 2000

Highway Capacity and Congestion

The transportation network in the area of the NWARA consists of different types of highways and local roads. Controlled-access highways, such as Interstates, provide long-distance, high-speed through travel service with limited access points to and from the local street network. Arterial routes, with or without frontage roads, provide access to local streets and adjacent property. Local streets are primarily used for short-distance, low-speed travel and property access.

The ability of a roadway to supply transportation services is measured by its capacity. The capacity of a section of highway is the maximum number of vehicles that can be reasonably expected to use that section under the prevailing roadway and traffic conditions, including traffic control provisions such as signalized intersections, turning lanes and other similar provisions. Capacity is expressed in terms of peak hour traffic (VPH) that a given segment of roadway can accommodate. The capacity of a longer section of roadway is limited by the section with the lowest capacity.

Many factors influence the actual capacity of a roadway. The number of lanes and the type of access control are major determinants. Roadways on which vehicles are allowed to make unrestricted right and left turns typically have lower capacities than roadways of similar size with turning restrictions in the form of central medians, left-turn lanes, right-turn lanes, or grade-separated interchanges. When vehicles slow or stop to make a turn, they impede the progress of vehicles behind them and thereby reduce traffic flow and capacity. When transportation demand exceeds transportation system capacity, performance suffers.

Congestion

Congestion occurs when traffic volumes on a roadway approach the capacity of the roadway. Congestion is determined by a qualitative measure known as Level of Service (LOS). LOS can be used to describe general operating characteristics along long segments of a roadway or at specific intersections. It also describes the general operating conditions of a roadway at peak travel periods and is directly related to either the traffic volume to capacity ratio or the duration of delay. LOS is given a letter designation from A to F, with LOS A representing very good operating conditions and LOS F representing very poor operating conditions with lengthy delays and heavy congestion. As a practical consideration, LOS D is generally considered the limit of acceptable operations in urban areas, with LOS C or better being the desirable condition in rural areas. This is consistent with the 2000 Highway Capacity Manual.

The purpose of this section is to present existing 2008 and forecasted (2013, 2018, 2023, and 2028) LOS analysis results for Highway 264 from I-540 to the NWARA, since this roadway serves as the primary southern access to the Airport. Based on existing traffic count data presented in the Trip Generation Report found in Appendix A1, about 55% of all trips to and from the Airport use Highway 264. According to 20-year development plans for the Airport, the number of vehicle trips on Highway 264 is expected to grow three-fold. This growth in traffic is demonstrated in Table A5. Subsequent traffic congestion will likely disrupt local communities and cause serious travel delays. The analysis illustrates the less than desirable current LOS and the degradation of the LOS on Highway 264 over time. Table A5 reflects only traffic on Highway 264 east of the airport entrance road while previously presented Table A3 reflects total traffic flow in all directions. The Trip Generation Report referenced above reflects traffic forecast for 2005-2025 in five-year increments. A combination of ADT from AHTD through 2007 and the SNB FEIS traffic forecast for 2004 -2024 along with a straight-line forecast method was used to adjust to a 2008-2028 forecast in five-year increments.

Table A5
AIRPORT AND NON-AIRPORT GENERATED TRAFFIC FORECASTS, BETWEEN AIRPORT ENTRANCE TO CAVE SPRINGS (From Trip Generation Report)
Northwest Arkansas Regional Airport Access Road DEIS

	2008	2013	2018	2023	2028
Non-Airport Traffic	1,780	2,088	2,432	2,780	3,080
Airport Generated Traffic	5,323	8,080	10,472	12,080	13,880
Total ADT	7,103	10,168	12,904	14,860	16,960

Existing Roadway System

The roadway alignment characteristics of Highway 264 from I-540 to the NWARA used in this analysis are described below. The roadway alignment information shown on Figures A4 and A5 is a portion of the input into the level of service (LOS) model. The level of service model methodology is further described in the Technical Memorandum in Appendix A1.

This stretch of highway is 9.4 miles (15.1 kilometers) in length, 5.4 miles (8.7 kilometers) of which is "no passing" (57%). There is one passing zone on Highway 264 east of Cave Springs that is approximately 2.1 miles (3.4 kilometers) in length. On Highway 264 west of Cave Springs, there are two passing zones approximately 1.3 miles (2.1 kilometers)

and 0.8 miles (1.3 kilometers) in length. The entire segment generally consists of two driving lanes that are 12 feet (3.6 meters) in width, and shoulders that vary in width from 2 feet (0.6 meter) to 5 feet (1.5 meters).

The speed limit along the entire segment is generally posted at 55 mph (90 km/h), except in those portions of no passing mentioned above. In these areas, the speed limit varies from 30 mph (50 km/h) to 45 mph (70 km/h). There are four 90-degree curves on the Highway 264 between the south airport entrance and I-540. Two of these occur in Cave Springs at two controlled intersections with stop signs on Highway 264. There are 16 side streets and roads, and 79 driveways that intersect this segment.

Traffic Forecasts and Assumptions

Since detailed, current origin-destination (O/D) information did not exist for the Airport, a series of traffic counts and an O/D travel survey was conducted to obtain a better understanding of the external trip patterns to and from the Airport. Traffic count data were collected in March 2004 at various locations on and adjacent to the Airport. O/D survey data were collected at four locations, both on- and off-airport property in April 2001.

The traffic count data from March 2004 was deemed the most reliable source for establishing existing traffic patterns. The count data was comprehensive and showed consistencies between movements over time. The O/D survey data are considered valuable; however, the small sample size and short survey duration may tend to skew actual travel characteristics slightly.

For example, analysis of the useable 2001 O/D survey responses revealed that approximately 58% of the traffic destined to the Airport during the O/D survey schedule used Highway 12 located at the northern boundary of the Airport. The balance, 42%, accessed NWARA using Highway 264 and the south entrance to the Airport during the O/D survey. Whereas, based on the March 2004 traffic count data, 55% of the traffic is accessing the Airport from the south and 45% are accessing from the north.

It is assumed that future trip distribution patterns will vary slightly from the observed traffic count patterns as this part of the state continues to grow. The large well established employers, such as Wal-Mart located north of the NWARA, will continue to account for many of the vehicles accessing the Airport through the north entrance and using Highway 12, while other large well established employers such as J.B. Hunt and Tyson Foods located east and south of the NWARA, will continue to account for many vehicles accessing the NWARA through the south entrance using Highway 264. Also, Fayetteville, Farmington, Springdale, and Lowell, and the areas around these communities, including the University of Arkansas, will continue to grow and be the

source of the vehicles entering the NWARA from the south, using Highway 264. However, according to population forecasts, the communities north of the NWARA will grow faster than the communities to the south. Therefore the current distribution of trips, 55% from south versus 45% from north, is expected to shift slightly to the north and result in an approximate 50/50 split by year 2020.

Annual average daily traffic (AADT) counts taken by the AHTD from 1995 through 2007 provided the basis for the non-airport related traffic forecasts. A 3% compounded growth rate, calculated from historical AADT counts prior to the opening of the NWARA, was applied to existing background traffic volumes to forecast traffic to the year 2028. This is a somewhat conservative projection of background traffic, as it does not consider an accelerated, or induced, growth in the area around the NWARA. Trip generation estimates for the NWARA were added to background traffic data to predict the total number of vehicles using Highway 264 in the future (refer to Appendix A1). Table A6 presents the average daily traffic for existing and future conditions used in this analysis. The percentage of daily trips that occur during the peak hour (k factor) was assumed to decrease over time, as more trips tend to occur outside the peak period as traffic volumes grow over time. The peak hour directional distribution (d factor) of traffic was assumed to be 60% in the peak travel direction.

Table A6
HIGHWAY 264 TRAFFIC FORECASTS (TWO-WAY ADT)
Northwest Arkansas Regional Airport Access Road DEIS

			Highway 264 East of Cave Springs		Highway 264 West of Cave Springs	
Year	**PHF**	**k factor**	**ADT**	**Peak Hour**	**ADT**	**Peak Hour**
2008	0.93	0.12	5,700	440/290	4,900	380/250
2013	0.94	0.115	7,540	550/370	6,280	460/300
2018	0.94	0.105	9,300	630/420	7,650	510/340
2023	0.94	0.095	11,250	680/450	9,020	540/360
2028	0.94	0.09	13,040	740/500	10,400	590/400

Peak Hour volumes are shown for AM/PM.
PHF=Peak Hour Factor.

The percentage of trucks and farm vehicles in the traffic stream based on field observations taken in April 2001 for Highway 264 west varied from 6% to 11% and was assumed to remain constant over time. The mean travel speeds used for autos, trucks,

and farm vehicles were 55 mph (90 km/h) and 35 mph (55 km/h). These travel speeds were used to develop the forecast, based on future improvements, not current design speeds. The complete LOS analysis performed in support of this Purpose and Need is included in the Trip Generation Study in Appendix A1. Excerpts from this analysis are included herein.

Level of Service Analysis

Capacity analysis is the standard approach for measuring the quality of service provided by a roadway. Capacity analysis predicts the LOS, which qualitatively describes the operational characteristics of a roadway. LOS is described by the following letter designations: A, B, C, D, E, and F. Level of service "A" (free-flow) represents the highest quality of service, and "F" (complete congestion) the worst. Two parameters are used to measure LOS quality for the two-lane highways, average travel speed and percent time spent following (defined as the average percent of total travel time that vehicles must travel in platoons behind slower vehicles due to inability to pass on a two-lane highway).

Separate LOS analyses were conducted for Highway 264 (two-lane rural highway analysis) and the two intersections in Cave Springs (unsignalized intersection analysis). Each is described below.

Highway 264 – Two-Lane Rural Highway. Using the traffic forecasts and assumptions described herein, the projected LOS for both Highway 264 East of Cave Springs (Highway 264 East) and Highway 264 West of Cave Springs (Highway 264 West) was determined. Table A7 summarizes the projected LOS from existing conditions through the horizon years (2008 to 2028).

Table A7
PROJECTED LOS HIGHWAY 264 EAST AND WEST OF CAVE SPRINGS
Northwest Arkansas Regional Airport Access Road DEIS

		2008	2013	2018	2023	2028
Highway 264 East of Cave Springs	LOS	C	D	D	D	D
	%Time Spent Following	64.4%	67.7%	69.4%	70.8%	71.9%
Highway 264 West of Cave Springs	LOS	C	C	C	C	C
	%Time Spent Following	60.0%	61.8%	62.6%	63.3%	64.5%

Highway 264/Highway 112 Unsignalized Intersections. Average delay is the service measure used to assess LOS for unsignalized intersections. Table A8 presents the results of the analysis for the two Cave Springs intersections (at Highway 112). These intersections currently operate by controlling Highway 264 traffic only, allowing Highway 112 traffic to flow freely. Turning movement volumes were generated based on the projected future demand. Intersection improvements are scheduled for the southern intersection when funding becomes available. Improvements to include signalization will substantially improve the operation of the south intersection.

Table A8
PROJECTED LOS (EXISTING UNSIGNALIZED INTERSECTION ANALYSIS)
Northwest Arkansas Regional Airport Access Road DEIS

INTERSECTION		2008	2013	2018	2023	2028
Highway 264/ Highway 112 North	LOS (AM/PM)	C/C	D/D	E/F	F/F	F/F
	Average Delay (AM/PM)	18 sec.	30 sec.	40 sec.	49 sec.	70 sec.
Highway 264/ Highway 112 South	LOS (AM/PM)	F/F	F/F	F/F	F/F	F/F
	Average Delay (AM/PM)	283 sec.	758 sec.	>999 sec.	>999 sec.	>999 sec.

Note: Intersection improvements including signalization are planned when funding becomes available.

Note that both intersections are predicted to degrade to LOS F (for at least one movement) by 2018 if not improved. However, signalization improvements are planned for the south intersection. Once these improvements are made the intersection will operate at a LOS C/C through 2013 assuming the improvements are made soon. The intersection would then reduce to a LOS D/D in 2018 and continue to reduce as traffic increases. However the north intersection will continue to degrade in performance as shown in Table A8 without intersection improvements.

Conclusions

Without improvements, the performance of Highway 264 will continue to degrade in the next ten to twenty years. The facility currently operates at LOS C/C in the two-lane sections and LOS C/F at the unsignalized intersections in Cave Springs. Increases in traffic demand, both for the NWARA and surrounding areas, will result in continued degradation of performance.

For a typical rural roadway, LOS E would not be acceptable, but the effects of this performance are more severe for an airport access facility. By 2013, approximately 70% of all vehicles will be delayed by platoons of vehicles on Highway 264, frequently forcing passenger cars to follow slow-moving trucks, buses, and farm vehicles. With a sizeable percentage of trucks on the roadway, and noticeable numbers of slow-moving school buses and farm vehicles, drivers will be faced with an increasing and unpredictable travel time on the nine-mile section of Highway 264 to the Airport. By 2028 over 80% of all vehicles will be delayed.

The *Airport Ground Access Planning Guide*, prepared jointly by the Federal Highway Administration and Federal Aviation Administration, strongly emphasizes the need for effective ground access to airport facilities. The guide provides examples of the potential economic consequences of poor accessibility to airports, and recommends the development of alternative strategies and actions to improve performance. The analyses described here highlight the future degradation in airport ground access that will occur without improvements to Highway 264. The facility will operate at an unacceptable LOS in the next several years, and improvements are needed so that effective ground access can be provided to the public.

Crash History

The AHTD maintains records of all traffic crashes that occur along highways under its jurisdiction. These records are used to identify locations on the roadway network with

excessively high crash rates or other safety problems. Table A9 entitled *CRASH HISTORY SUMMARY/COMPARISON OF ANNUAL AVERAGE CRASHES PER MVM FOR HIGHWAY 264 (1993-2007)*, summarizes crashes along Highway 264 between I-540 and Highfill (Highway 12) over the 15-year period for which data was compared.

During the six-year period between 1993 and 1998, before the NWARA opened, there were 176 crashes along Highway 264 evaluated within 12.3 miles (19.8 kilometers) of the NWARA, one of these resulting in a fatality. There were 75 crashes with injuries and 100 crashes without injuries.

The NWARA opened in November 1998 and in the nine-year period between 1998 and 2007 there were 274 crashes including two fatalities, 137 injury crashes, and 135 non-injury crashes. A significant reduction in crashes along this route occurred in 2007.

Table A9
CRASH HISTORY SUMMARY/COMPARISON OF ANNUAL AVERAGE CRASHES PER MVM FOR HIGHWAY 264 (1993-2007)
Northwest Arkansas Regional Airport Access Road DEIS

Year	Fatal Crashes	Injury Crashes	Non-Injury Crashes	Total Crashes	Crashes Per MVM Highway 264	Statewide Per MVM* Average[1]	Percentage Greater or (Less) Than State
1993	1	16	16	33	3.82	1.45	163
1994	0	10	10	20	1.78	1.52	17
1995	0	13	23	36	2.85	1.49	91
1996	0	13	21	34	2.81	1.50	87
1997	0	12	24	36	2.54	1.38	84
1998	0	21	26	47	3.31	1.36	143
1999	0	7	19	26	1.30	1.33	(3)
2000	0	10	11	21	1.08	1.34	(24)
2001	0	14	20	34	1.46	1.24	17
2002	2	20	15	37	1.55	1.25	24
2003	0	13	19	32	1.33	1.26	5
2004	0	19	20	39	1.59	1.32	20
2005	0	18	17	35	1.25	1.24	1
2006	0	25	9	34	2.36	1.18	100
2007	0	11	5	16	1.09	1.15	(6)

Source: Arkansas State Police Traffic Records: 1993 through 2005.
[1] Average for two-lane undivided rural highways with no access control.
* Million Vehicle Miles

Table A9 also shows a comparison of crashes per million vehicle miles (MVM) for both the indicated portion of Highway 264 and the statewide average for two-lane undivided highways with no access control. This calculation was made using the roadway sections and log miles from AHTD and crash data from the Arkansas State Police Traffic Records. Figure A8 entitled *CRASH DATA MAP,* illustrates this in graphic form showing the crashes in three-year increments by roadway section and log miles. Based on the crash history, it can be concluded that the route has a higher crash rate than similar roadways in the state.

With the forecasted traffic reflecting considerable growth, the number of crashes and the severity of those crashes are expected to continue to increase dramatically if no further improvements are made to the roadway system. The rate of crashes per MVM is expected to increase along Highway 264 as traffic demand and congestion increase. This

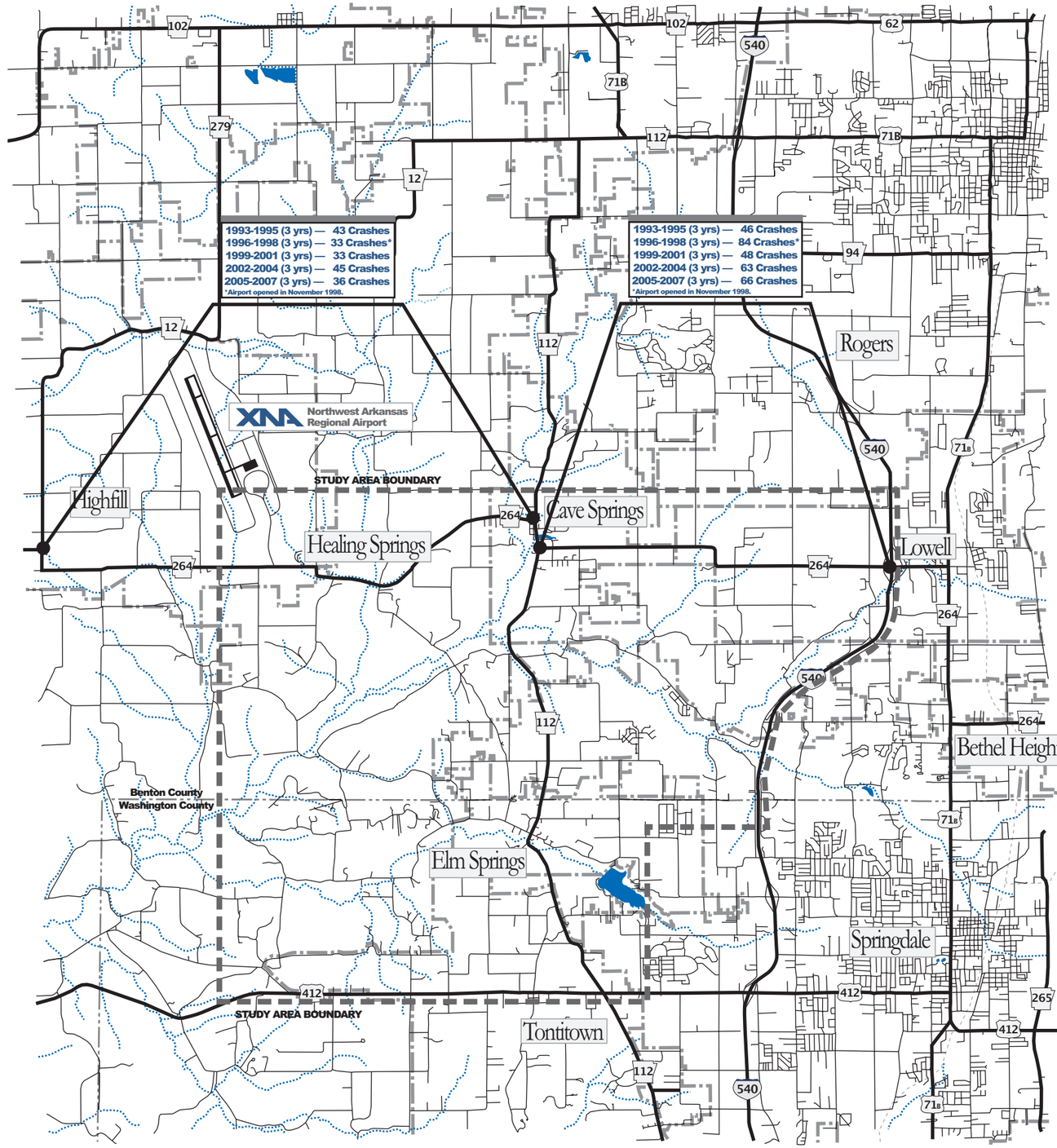


Figure A8 **Crash Data Map**

- *Study Area Boundary*
- *Interstate Highway*
- *U.S. Highway*
- *State Highway*

* **Source: Arkansas State Police Traffic Records: 1993-2005**

N

Map to Scale
1" = 8,500'

Northwest Arkansas Regional Airport Intermodal Access Road Environmental Impact Statement

Source: AHTD and/or CH2M Hill Forecast
State Project Number 090069 — FAP HPP-0238(1)

congestion may cause frustration to drivers who are attempting to reach the NWARA to meet airline schedules, and may lead to passing in no-passing zones, driving at higher than posted speeds, and not maintaining safe distances between moving vehicles.

Public and Local Official Involvement

Meetings with the general public and local officials were an integral part of the development of this project. The initial step conducted for the study was to meet with the public and local officials. Five separate sessions in the Elm Springs City Hall were held to kick off the Environmental Impact Statement (EIS) process in March 2000. These meetings had several objectives:

- To inform all parties of the project, the various steps in the study, and the schedule.
- To request early information from these parties that may be pertinent to the study.
- To present and obtain input on the environmental issues to be considered at various steps in the study.
- To inform the public and local officials of the points in the study at which public meetings would occur and how to participate throughout the study.

With respect to project need, the public and local officials meetings provided a forum in which to discuss:

- Concerns relative to the use of the Intermodal Access Road.
- Benefits anticipated from the construction of the proposed Intermodal Access Road.
- Concerns about the construction of the Intermodal Access Road.
- Improved safety.
- Reduced travel time.
- Reduced congestion on existing route(s).

Summary (Purpose and Need Statement)

The current highway system providing access to the primary airport entrance does not safely and efficiently accommodate existing traffic demand. It has a traffic mix consisting of automobiles, trucks, farm equipment, school buses, and mail carriers, and contains roadway geometric conditions that will contribute to projected congestion and low levels of service in the future. Based on the crash history it can be concluded that the route has a higher crash rate than similar roadways. These roadway conditions indicate a need for improved access to the NWARA. Without additional roadway

capacity, congestion, travel times, and crash rates will continue to increase, and access to the airport will be severely limited, creating an unacceptable LOS.

In summary, the existing roadway system capacity is limited in its ability to accommodate existing and future traffic demand. Traffic congestion is projected to increase with a resulting decrease in the level of service. Therefore, the purpose of the project is to provide improved vehicle access to the NWARA, which will provide higher levels of safety and traffic efficiency for the existing and future traffic demand.